

1 **ABSTRACT**

2 An image distribution system has a source that encodes digital images and
3 transmits them over an error-prone channel to a destination. The source has an
4 image coder that processes the digital images using vector transformation followed
5 by vector quantization. This produces groups of vectors and quantized values that
6 are representative of the images. The image coder orders the vectors in the
7 codebooks and assigns vector indexes to the vectors such that a bit error occurring
8 at a less significant bit in a vector index results in less distortion than a bit error
9 occurring at a more significant bit. Depending upon the format and the
10 capabilities of the source and destination, the image coder may allocate different
11 numbers of bits to different groups of vectors according to a bit allocation map for
12 this allocation process. The source also has a UEP (Unequal Error Protection)
13 coder that layers the vector indexes according to their significance. Two possible
14 approaches include frequency-based UEP and bit-plane based UEP. The source
15 transmits a bitstream that includes the image values, a bit allocation map, and the
16 layered vector indexes. The destination receives the bitstream and recovers the
17 vectors using the vector indexes and bit allocation map. The destination then
18 reconstructs the image from the image values and the vectors.

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